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Remarks

The application has been amended to more clearly define the invention.

Reconsideration is respectfully requested.

The grounds for objection to claim 1 has been corrected. The applicant thanks the examiner for pointing this matter out.

Claims 1 – 2, 4 – 5, 7 – 10 and 17 stand rejected as being anticipated by U.S. Patent No. 4,965,803 to Esterowitz et al (hereinafter "Esterowitz"). Claims 3, 6, 11, 14, 16 and 18 stand rejected as being unpatentable over Esterowitz in view of US Patent No. 6,215,800 to Komine (herinafter "Komine").

The limitations of claim 3 have been incorporated into claim 1, and the limitations of claim 6 have been incorporated into claim 5. The above grounds for rejection are traversed as follows.

Esterowitz discloses a room-temperature, laser-pumped, Q-switched, thulium-doped, solid state laser for producing pulses of laser emission at substantially 2 microns is disclosed. In a preferred embodiment, the laser comprises: a laser cavity defined by first and second reflective elements opposing each other on a common axis to form a reflective path therebetween; a laser crystal disposed in the laser cavity, the laser crystal having a host material doped with an amount of thulium activator ions sufficient to produce a laser emission at substantially 2 microns from the laser transition in the thulium activator ions when the laser crystal is enabled and is pumped by a CW pump beam at a preselected wavelength; a pump laser for pumping the laser crystal with the CW pump beam at the preselected wavelength; and a Q-switch disposed in the laser

cavity between the laser crystal and the second reflective element for periodically enabling the laser crystal to produce a pulsed laser emission at substantially 2 microns when the laser crystal is also pumped by the CW pump beam.

Komine discloses an apparatus that increases the conversion efficiency of optical parametric oscillators. The apparatus comprises an intracavity difference-frequency mixing optical parametric oscillator structure which receives a pulsed-pump beam from an optical pump source. The pump beam is received through an input mirror of a singly resonant cavity having an input and output end. Located within the singly resonant cavity are first and second nonlinear crystals for receiving the pump beam. The first crystal produces signal and idler waves which are received into the second crystal which produces additional idler frequency and a difference-frequency. An output mirror positioned at the output end of the cavity is totally reflective to the signal frequency and fully contains the signal frequency within the resonator cavity.

Notwithstanding the above, nothing in Esterowitz and Komine, either considered together or separately, teaches or suggests the use of a 2 micron laser to drive an optical parametric oscillator (OPO) using a zinc germanium phosphide crystal to achieve the beneficial results disclosed in the specification, for example, at page 6, lines 15-19. Esterowitz discloses using a Thulium 2 micron laser, but it does not disclose its use to drive an optical parametric oscillator (OPO) or using a zinc germanium phosphide crystal. Komine discloses driving an optical parametric oscillator (OPO), but it uses a 1 micron laser and does not use a Thulium laser. Certainly one can pick and choose references (among a great many references in this technical field) each of which shows a part of the method or apparatus of the present invention. That exercise of picking and

choosing between references would not, however, serve to predict the beneficial efficiencies obtained by means of the unique combination of steps and elements recited in the claims. "It is insufficient that the prior art disclosed the components of the patented device, either separately or used in other combinations; there must be some teaching, suggestion, or incentive to make the combination made by the inventor." *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990), *cert. denied*, 498 U.S. 920 (1990) "...in addressing the question of obviousness a judge must not pick and choose isolated elements from the prior art and combine them to yield the invention in question...." *Dennison Mfg. Co. v. Panduit Corp.* 475 U.S. 809, 229 USPQ 478 (1986).

Claims 12, 13, and 15 stand rejected under 35 USC103(a) as being unpatentable over Esterowitz, in view of Komine, and further in view of US Patent No. 6, 647,033 to Smith et al (hereinafter "Smith"). The limitations of claim 12 have been incorporated into claim 9. The above grounds for rejection is traversed as follows.

Again, nothing in the references, either considered separately or together, would teach or suggest the specific combination claimed by the applicant nor would those references predict the results obtained.

Smith discloses an optical parametric oscillator (OPO) having an optical pump, which generates a pump beam at a pump frequency greater than a desired signal frequency, a nonlinear optical medium oriented so that a signal wave at the desired signal frequency and a corresponding idler wave are produced when the pump beam (wave) propagates through the nonlinear optical medium, resulting in beam walk off of the signal and idler waves, and an optical cavity which directs the signal wave to repeatedly pass

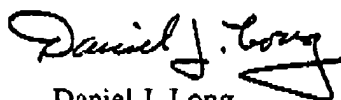
through the nonlinear optical medium, said optical cavity comprising an equivalently even number of non-planar mirrors that produce image rotation on each pass through the nonlinear optical medium. Utilizing beam walk off where the signal wave and said idler wave have nonparallel Poynting vectors in the nonlinear medium and image rotation.

Again, nothing in the references, either considered separated or together, would teach or suggest the specific combination claimed by the applicant nor would those references predict the results obtained.

Claim 15 stands rejected under 35 USC(a) as being unpatentable over Esterowitz in view of Smith. New claims 19 - 24 include the limitations of claim 9 and 15. For the reasons stated above the applicant contends that these claim are unobvious over Esterowitz in view of Smith.

It is believed that the application is now in condition for allowance. If the examiner believes that any matters are still at issue, he is requested to contact applicant's undersigned attorney.

Respectfully submitted,



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I hereby certify that this correspondence is being transmitted by facsimile (571) 273-8300 to Commissioner of Patents, Box 1450, Alexandria, VA 22313-1450 on December 13, 2007.

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Daniel J. Long

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Date of Signature